CALPINE GILROY COGEN, L.P.

717 TEXAS AVE., SUITE 13.074
HOUSTON, TX 77002

September 13, 2010

DOCKET
84-AFC-4C
DATE SEP 13 2010
RECD. SEP 16 2010

Christine Stora
California Energy Commission
1516 Ninth Street, MS-29
Sacramento, CA 95814-5512

RE: Calpine Gilroy Cogen, LP Amendment
AFC 84-AFC-4C

Dear Ms. Stora:

Please find the attached amendment application for Calpine Gilroy Cogen, L.P. This amendment application is for modifications the facility is proposing to make to comply with Bay Area Air Quality Management District Regulation 9 Rule 9 for gas turbines. The district is almost complete with their review and the draft Engineering Evaluation is attached for your reference.

Please let me know if you have any questions or require additional information. I can be reached at 925-570-0849.

Sincerely,

Barbara McBride
Director, Environmental, Health and Safety
Calpine Western Region

CALPINE GILROY COGEN AMENDMENT TO 84-AFC-4C

Prepared for
Calpine Gilroy Cogen, LP

September 2010

Table of Contents

1.0 Introduction

1.1 Overview of Amendment

The Calpine Gilroy Cogen, LP ("CGC, LP" or "Petitioner") operates the Gilroy Cogeneration Project ("GCP" or "Project"), a cogeneration facility located 30 miles south of San Jose in the City of Gilroy. The facility consists of an operational 115 megawatt (MW) (net) natural gas-fired power plant.[1] CGC, LP is a wholly-owned indirect subsidiary of Calpine Corporation. The Commission granted the original license for the Project on November 13, 1985 (hereinafter, "1985 Decision").

Pursuant to Section 1769 of the Commission's Siting Regulations,[2] this Petition for Modification requests changes to the 1985 Decision for the installation of a Dry Low Nitrogen Oxide (DLN) combustor unit on the Project's S-100 GE Frame 7 Gas Turbine Generator (S-100 gas turbine) to meet new regulations for nitrogen oxides (NOx) from stationary gas turbines. The changes requested to the 1985 Decision's Air Quality Conditions of Certification will update the conditions so that they are current with the recent changes in Bay Area Air Quality Management District ("BAAQMD") Regulation 9, Rule 9.

1.2 Summary of Environmental Impacts

Section 1769 (a)(1)(E) of the Commission's Siting Regulations requires that an analysis be conducted that addresses the impacts a modification might have on the environment and proposed measures to mitigate any significant adverse impacts. In addition, Section 1769 (a)(1)(F) requires a discussion of the impacts a modification might have on the project's ability to comply with applicable laws, ordinances, regulations and standards (LORS). Section 3.0 of this Amendment addresses potential environmental impacts and consistency of the modification with LORS for the proposed Project change. The proposed Project change will result in a decrease in NOx emissions. Accordingly, Section 3.0 concludes that this petition will not result in adverse environmental impacts and that the Project, as modified, will comply with applicable LORS.

1.3 Consistency of Amendment with License

Section 1769 (a)(1)(D) of the Commission's Siting Regulations requires a discussion of whether the proposed modifications are based upon new information that changes or undermines the assumptions, rationale, findings, or other bases of the final decision. This section also seeks an explanation of why the requested changes should be permitted. The proposed changes to the Air Quality Conditions of Certification are based upon new requirements triggered by the recent changes to BAAQMD Regulation 9, Rule 9 and information evaluated after the

[1] The Project was originally certified to also allow the use of low-sulfur fuel oil for backup in the event of an emergency natural gas curtailment. (Commission Decision, Doc. No. 84-AFC-4, November 13, 1985.)

[2] California Code of Regulations, tit. 20, Section 1769.

completion of the certification process during the operational phase of the Project. Because these changes ensure compliance with BAAQMD Regulation 9, Rule 9, they are consistent with the intent of the 1985 Decision and do not undermine the assumptions, rationale, findings or other basis of the final decision.

2.0 Description of Project Amendment

Consistent with California Energy Commission Siting Regulations Section 1769 (a)(1)(A) and 1769(a)(1)(B), this section includes a complete description of the Project modification, as well as the necessity for the amendments.

2.1 Project Description

Petitioner plans to install a Dry Low NOx ("DLN") combustor unit (combustor) on the facility's S-100 GE Frame 7 Gas Turbine Generator ("S-100 gas turbine"), to meet the BAAQMD and State Implementation Plan ("SIP") revisions to Regulation 9, Rule 9, "Nitrogen Oxides from Stationary Gas Turbines."

Installation of the DLN combustor involves a change in the combustion section of the S-100 gas turbine and a new dedicated continuous emissions monitor ("CEM"). The existing combustors, combustion cans, and some fuel piping would be replaced with a new multi-stage combustor, new combustion cans (combustion chambers), and new fuel piping to the new combustor. DLN technology reduces NOx formation by controlling the flame temperature. The fuel is staged to reduce the overall firing temperature while maintaining similar mass flow to the ten combustor combustion chambers. Implementation of the DLN technology in the S-100 gas turbine will produce lower NOx emissions and does not require the use of NOx steam injection to control NOx. This allows the steam to be reassigned for other uses, such as power generation at other turbines or supply of cogeneration host load.

Calpine is currently controlling the NOx emissions from the S-100 turbine with steam injection. After the DLN combustor is installed, the steam injection equipment will no longer be used. NOx emissions from the S-100 gas turbine will be monitored by the dedicated CEM, and because the steam injection will no longer exist, the rate of steam injection will not be monitored.

The S-100 gas turbine emissions are subject to Regulation 9, Rule 9 which establishes a new limit of 5 ppmv @15% O2 or 0.15 lb/MW of NOx. With installation of the new combustor, emissions from the S-100 gas turbine will achieve a NOx limit of 0.15 lb/MW or 5 ppmvd.

This Amendment does not result in negative air quality impacts for the following reasons.

- There is no emissions increase associated with this Project change;
- There is no toxic emissions increase associated with this Project change;
- No offsets are required for the Project change; and

- The proposed Project change will result in a decrease in of NOx emissions.

For facilities that must install new control equipment, the BAAQMD deadline to comply with lower NOx emission limits is the next scheduled major maintenance or January 1, 2012, whichever is earlier.[3] Petitioner currently plans to install the new Dry Low NOx combustors during the next major maintenance event scheduled for April 2011.

The BAAQMD will submit the minor revision to EPA for review after the BAAQMD has issued the Authority to Construct.

The proposed changes in the Conditions of Certification that will implement this reduction are set forth in Section 4.

2.2 Necessity of Proposed Changes

The change being requested to the above Air Quality Conditions of Certification are required to update the Conditions so that they are current with the recent changes in the BAAQMD Rules and Regulations, which result in lower NOx limits and new Best Available Control Technology ("BACT") standards.

3.0 Environmental Analysis of the Project Changes

The modifications proposed by this amendment will allow the Project to achieve a lower NOx limit, and therefore allow the Project to comply with applicable laws, ordinances, regulations, and standards. The proposed changes will also result in inclusion of the most current LORS during the operational phase of the facility.

For these reasons, there are no significant adverse environmental impacts of this amendment.

4.0 Proposed Modifications to the Conditions of Certification

Consistent with the requirements of the Commission Siting Regulations Section 1769 (a)(1)(A), this section addresses the proposed modifications to the Project's Air Quality Conditions of Certification.

[3] See BAAQMD Regulation 9, Rule 9, Section 9-9-402.2.

~~1. Except as provided in Condition 7, the~~ The oxides of nitrogen (NO_x) concentrations in the gas turbine exhaust shall not exceed 25 ppmdv at 15 percent oxygen averaged over any 3-hour period ~~whether firing natural gas or fuel oil~~. This limit shall not apply during a cold start-up, which is not to exceed four hours, or shut-down procedure, which is not to exceed two hours. However, for daily start-ups after a shut-down of twelve (12) hours or less, the start-up period shall be limited to one (1) hour. During any mode of operation, GEC shall inject steam for NO_x control when steam of specified pressure and temperature is available. ~~If within six months of initial start up of the subject facility Gilroy Energy Company is unable to achieve the concentration limitation of 25 ppm, Gilroy Energy Company shall take action to achieve the 25 ppm limit be retrofitting the heat recovery boiler with an APCO approved control device pursuant to a schedule approved by the District Hearing Board in an action for variance relief.~~ **Effective after the new Dry Low NOx combustor becomes operational, the oxides of nitrogen (NOx) concentration in the S-100 gas turbine exhaust shall not exceed 5 ppmvd at 15% oxygen or 0.15 lb/MW-hr averaged over any three-hour period excluding startup and shutdown periods. The Dry Low NOx combustor shall be installed no later than January 1, 2012.**

Verification: GEC shall monitor compliance with the NO_x emission limitation with the continuous in-stack emission monitors described in Condition 12. ~~In the event that the NOx emissions limitations is not achieved within six months of initial start up of the facility, Gilroy Energy Company shall apply to the BAAQMD for a variance for the purpose of retrofitting the facility with Selective Catalytic Reduction (SCR) or other APD approved control device.~~ GEC shall forward to the CEC copies of all submittals made to and received from the BAAQMD.

~~2. The heat recovery boiler shall be designed to accommodate a Selective Catalytic Reduction (SCR) system, capable of achieving 25 ppmdv NO_x as an alternative to NO_x control by increased steam injection. The APCO may require installation of a SCR system if applicant fails to meet the NO_x emission limitation of DOC Condition 1.~~

~~Verification: GEC shall provide the BAAQMD drawings acceptable to the BAAQMD, for the heart recovery boiler 45 days prior to the date of their release for fabrication. GEC shall notify the CEC of the availability of drawings when they are provided to the BAAQMD.~~

~~5. Any fuel oil fired (except as provided in Condition 7) shall not exceed a maximum sulfur content of 0.12 percent (by weight). GEC shall maintain records on the duration of fuel oil firing, the sulfur content, and in which operating sources fuel oil firing took place. All fuel receipts must be certified to 0.12 percent weight sulfur or less.~~

~~Verification: GEC shall issue quarterly reports to the BAAQMD and CEC and forward a copy to the ARB upon their request, detailing the contents of the fuel oil firing plant logs. During site inspections, GEC shall make the logs available to the BAAQMD, ARB, and CEC staffs. GEC shall provide the BAAQMD and CEC with copies of the fuel oil firing records upon request.~~

~~7. During periods of PGandE curtailment of natural gas, the maximum sulfur content of the fuel oil burned shall not exceed 0.25 percent (by weight), provided that the gas turbine was being fired on natural gas prior to the curtailment. During such periods, the NO_x emissions limit in Condition 1 shall not apply; NO_x will be controlled via steam injection at no less than the rate determined by the manufacturer's recommended maximum steam/fuel ratio or 83,000 lb/hr (at 59°F).~~

~~Verification: GEC shall provide the BAAQMD and CEC upon request, with copies of the fuel oil firing records required by Condition 5 and steam injection records required by Condition 9.~~

8. **Until such time that the Dry Low NOx combustor is installed and operational, t**~~T~~he steam injection to control NO_x emissions shall be operated during all periods when injection steam is available at the specified pressure and temperature. GEC shall, during the start-up period, perform tests to determine the steam injection rate necessary to assure compliance with Condition 1. The steam injection rate will be controlled by the gas turbine control system at all times during the operation of the gas turbine. **This condition will no longer apply after the Dry Low NOx combustor is installed and operational.**

Verification: **Until such time that the Dry Low NOx combustor is installed and operational,** GEC shall provide the BAAQMD and CEC, upon request, steam injection records required by Condition 9. **This condition will no longer apply after the Dry Low NOx combustor is installed and operational.**

9. Pursuant to Regulation 10, Rule 26, Section 501, GEC shall install and operate a continuous monitoring system to monitor and record the fuel consumption and the ratio of steam injection to fuel fired in the turbine. **This condition will no longer apply after the Dry Low NOx combustor is installed and operational.**

Pursuant to Regulation 10, Rule 26, Section 501, GEC shall install and operate a continuous monitoring system to monitor ~~**and record the fuel consumption and the ratio of steam injection to**~~ fuel fired in the turbine. **This condition will no longer apply after the Dry Low NOx combustor is installed and operational.**

Verification: GEC shall issue quarterly reports to the BAAQMD and CEC and forward a copy to the ARB upon their request, ~~**detailing the contents of the steam injection and fuel consumption logs.**~~ During site inspection GEC shall make the logs available to the BAAQMD, ARB, and CEC staffs. GEC shall provide the BAAQMD and CEC with copies ~~**of the steam injection and**~~ of the fuel consumption logs upon request.

~~16. Prior to burning fuel oil as the primary fuel in the gas turbine, GEC shall demonstrate to the satisfaction of the APCO and the CEC, during an approved test period, that the "quiet combustor" is capable of meeting the emission requirements of Condition 1. If within six months of initial start up of fuel oil as a discretionary fuel, the application is unable to achieve the concentration limitation of 25 ppm, Gilroy Energy Company shall~~

~~take action to install a selective catalytic reduction system or another APCO approved equivalent control system capable of satisfying the emission limit in Condition 1.~~

~~Verification: Action to install a selective catalytic reduction system or another approved equivalent, shall include immediate submittal to the BAAQMD and the CEC of the design details of the proposed change and a discussion of the potential change in air emissions from the project. GEC may not implement any major change without prior written approval from the CEC.~~

5.0 Potential Effects on the Public

Consistent with the requirements of the Commission Siting Regulations Section 1769 (a)(1)(G), this section addresses the proposed Amendment's effects on the public.

Revision of the Air Quality analysis in the 1985 Decision does not adversely affect the public. Petitioner proposes lowering the NOx emission limits for the Project, and this will have a beneficial impact on air quality and public health.

6.0 List of Property Owners

Consistent with the Commission's Siting Regulations Section 1769(a)(1)(H), this section lists the property owners affected by the proposed modifications:

All work will take place within the property boundaries of the Project site. Accordingly, the Amendment will not affect nearby property owners.

7.0 Potential Effects on Property Owners

Consistent with the Commission's Siting Regulations Section 1769(a)(1)(I), this section addresses potential effects of the proposed Amendment on nearby property owners, the public, and parties in the application proceeding.

Changes to the Conditions of Certification for Air Quality will not have any effect on property owners, the public or parties to the application proceeding. There is no emissions increase associated with this Project change. There is no toxic emissions increase associated with this Project change. No offsets are required for the Project change. The proposed Project change will result in a decrease in of NOx emissions.

Attachment A Design Details

See attached.

GE Energy

DLN1+ 4ppm combustion system for frame 7E and 7EA

fact sheet

Cleaner Emissions

To help meet ever-changing government regulations and business requirements that mandate cleaner emissions and demand greater operational flexibility, GE has enhanced its Dry Low NO_x (DLN) technology for 7E and 7EA gas turbines. This enhancement builds upon GE's experience and expertise in combustion technology aimed at reducing NO_x emission levels. Our new DLN1+ combustion system reduces NO_x emission levels to less than 4ppm (8mg/Nm^3), and produces single digit CO emissions when operating on natural gas at base load.

GE's upgraded, ecomagination certified DLN1+ combustion system enables our customers to comply with local regulations requiring reduced NO_x and CO emissions without impacting gas turbine performance. GE can optimize the NO_x and CO system emissions levels to conform to the customer's specific site ambient conditions, load range and emission requirements. The new DLN1+ system can be installed during a combustion inspection, a hot gas path inspection, or a major inspection, and carries with it a combustion inspection interval of 24,000 hours (based on natural gas operation).

Benefits

- Reduced NO_x and CO emissions - less than 4 ppm (8mg/Nm^3) NO_x across large load and ambient temperature range of 0°F to 120°F
- Option for sub-3.5 ppm NO_x available
- Very low NO_x and CO emissions solution for specific loads and ambient range
- Equivalent or improved turndown compared to current DLN1 offerings
- Improved potential for revenue from growing NO_x credit trading markets in the US and Europe
- Equivalent or improved turndown compared to current DLN1 offerings
- Improved potential for revenue from growing NO_x credit trading markets in the US and Europe
- Reduced maintenance costs and increased reliability due to 24,000 hour/450 starts combustion inspection interval
- Elimination of water usage and costs for steam/water injection for NO_x control
- Eliminated or reduced need for costly and complex SCR systems, along with associated ammonia slippage, water usage, and heat rate impacts

Features

- Patented combustion system
- Liner dilution design based on performonce, emissions, and reliability data from the 7E/7EA DLN1+ fleet
- Real-time data monitoring allows control system to enhance emissions across ambient ond load range
- Wear-resistant materials and coatings increase inspection intervals
- Proven, patented sealing technology leveraged from "F" class fleet leads to tighter performance and longer intervals
- Design is compatible with existing DLN1 fuel delivery system and end covers
- DLN1+ is compatible with current and planned 7EA improvements, such as advanced oera stage 3 components and OpFlex* enhancements
- Enhanced hot gas temperature profile with no impact on performance ar hot gas path component life
- Enhanced control option to further reduce emissions and eliminate need for seasonal tuning

Experience

Backed by the experience of mare than 23 million DLN fired hours, more than 150,000 fired hours of operation at sub-5 ppm NO_x emissions and demonstroted 50,000 fired hours of operation at sub-3 ppm NO_x, with no compromise on gas turbine integrity, GE's DLN1+ is the next generation combustion system for your 7E/7EA gas turbine.

Note: NO_x values are corrected to 15% O2.

Applicability

7E/7EA gas turbine.

Note: NO_x values are corrected to 15% O2.

Applicability

This offering is applicable to all 7E and 7EA gas turbines with firing temperatures of 2020°F (1100°C) or higher.

a product of
ecomagination

For more information please contact your GE Energy salesperson or representative, or visit us at www.ge.com/energy.

ecomagination

imagination at work

DLN 1+ (Dry Low Nox) Combustion System

GE's latest evolution of Dry Low NOx Combustion System (DLN 1+) for the GE 6b and 7ea gas turbines reduces NOx emissions to between 3 and 5 parts per million. This combustion system incorporates the latest in technology that improves stability and extends outage intervals.

Environmental Benefit

GE's DLN 1+ guarantees NOx emissions of 5ppm (10mg/Nm³) or lower depending on the customer's operating conditions. GE's DLN 1+ system delivers these low emissions without the use of water or a post combustion system.

Operating Benefit

The DLN 1+ Combustion System incorporates the latest technology that extends combustion inspection intervals to 24,000 hours, and has improved heat rate over a unit equipped with a post combustion system.

The environmental challenge

In use since the 1930s, gas turbine combustion systems have created energy for oil recovery operations, jet engines, naval vessels and power plants. While reliable, each turbine emits 25ppm of NOx per year, contributing to the increasing levels of smog, which can have negative effects on human health. In April 2002, the San Joaquin Air Quality district revised rule 4703 mandating a reduction in NOx emissions from certain gas turbine plants to between 3 and 5ppm.

GE's innovative solution

For more than 20 years GE has been working to create advanced gas turbine combustion systems that are more environmentally friendly while reducing operating costs for our customers.

Until recently, the only available option for equipment owners who wished to upgrade their machines and reduce emission levels was to install post combustion systems called selective catalytic reduction (SCR) systems. Installation of SCR systems on existing units is often difficult due to site limitations and high costs. Additionally, SCR systems require the use of ammonia, which adds to the operating cost of the facility.

But GE has a better option. GE's DLN 1+ Combustion System is a combustion system that replaces the existing gas turbine combustion install post combustion systems called selective catalytic reduction (SCR) systems. Installation of SCR systems on existing units is often difficult due to site limitations and high costs. Additionally, SCR systems require the use of ammonia, which adds to the operating cost of the facility.

But GE has a better option. GE's DLN 1+ Combustion System is a combustion system that replaces the existing gas turbine combustion system and guarantees NOx emissions to between 3 and 5ppm. The DLN 1+ Combustion System incorporates the latest technology, liner design, independent pilot fuel system and closed loop control system with tailored mixing and air dilution to ensure that the hot gas entering the turbine section does not impact component life.

Environmental impact

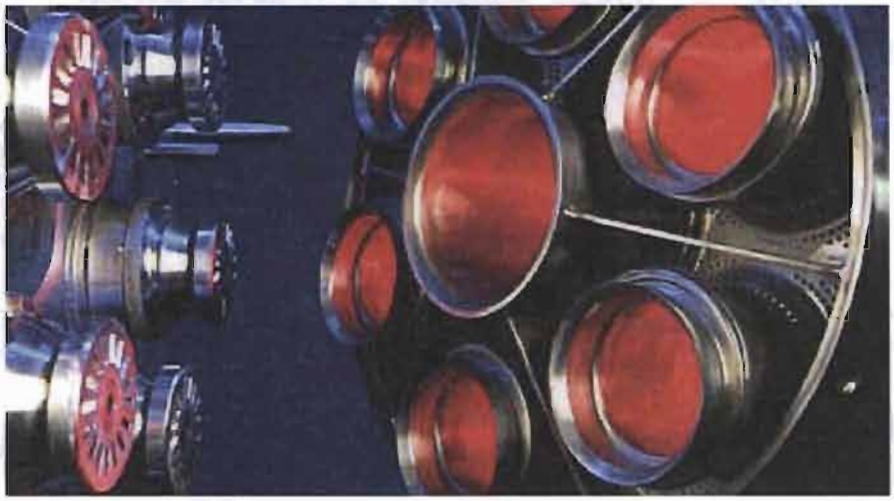
Upgrading an existing DLN 1+ system to the latest DLN 1+ system will lead to a 45 percent to 67 percent reduction in NOx emissions per year. Switching just five turbines to the DLN 1+ enhanced units would be the equivalent of planting 300 acres of trees or taking 500 cars off U.S. roads.

Cutting costs

Beyond cutting emissions and benefiting the environment, these upgrades are cheaper to install and garner the machine owners increased savings by not requiring ammonia to run cleanly.

GE's 5 ppm DLN 1+ Combustion System to Debut in Dow Chemical Plant

GE Energy Guarantees 3PPM Performance With New DLN 1+ Combustion System



Engineering Evaluation
Calpine Gilroy Cogen, LP & Gilroy Energy Center, LLC
1400 Pacheco Pass Hwy
Gilroy, CA 95020
Plant No. 11180
Application No. 18434

BACKGROUND

Calpine Gilroy is installing Dry Low NOx Combustors on the following source to meet Regulation 9, Rule 9, requirements that were adopted on December 6, 2006:

S-100 GE Frame 7 Gas Turbine Generator, Rated @ 87MW
Turbine, Cogeneration, 1085MM BTU/hr max,
Natural gas, 7 days/wk

Calpine is currently controlling the NOx emissions from the turbine with steam injection. After the Dry Low NOx Combustors are installed, the steam injection equipment will no longer be used.

The deadline to meet lower emission limits is January 1, 2010 unless the facility must install new control equipment. In that case, Section 9-9-402.2 allows compliance at the next scheduled major maintenance or January 1, 2012, whichever is earlier. The facility currently plans to install the new Dry Low NOx Combustors in April of 2011.

EMISSIONS SUMMARY

There is no emissions increase associated with this application. The turbine is subject to a number of BACT, NSPS, and Regulation 9, Rule 9, limits. Prior to the December 6, 2006 rule revision, the lowest NOx limit was 21 ppmv @ 15% O2. The new limit is 5 ppmv @ 15% O2 or 0.15 lb/MW, which is approximately 25% of the old limit.

Toxic Risk Screening:

There is no emissions increase associated with this application. This application does not require a Risk Screening Analysis under Regulation 2, Rule 5.

STATEMENT OF COMPLIANCE

BAAQMD and SIP Regulations 9, Rule 9, Nitrogen Oxides from Stationary Gas Turbines.

Calpine Gilroy is installing the Dry Low NOx Combustors on S-100, Turbine, to meet Regulation 9, Rule 9, Section 301.2 requirements that were adopted on December 6, 2006. The new combustor will achieve a NOx limit of 0.15 lb/MW-hr or 5 ppmvd.

Calpine is currently controlling the NOx emissions from the turbine with steam injection. After the Dry Low NOx Combustors are installed, the steam injection equipment will no longer be used.

The deadline to meet lower emission limits is January 1, 2010 unless the facility must install new control equipment. In that case, Section 9-9-402.2 allows compliance at the next scheduled major maintenance or January 1, 2012, whichever is earlier. The facility currently plans to install the new Dry Low NOx Combustors in April of 2011.

The owner/operator of S-100 shall comply with the revised Permit Conditions No. 2780 and No. 21961 and continue to comply with the unrevised Permit Condition No. 14299. Permit Condition No. 21961 is a PSD condition.

SIP Regulation 9, Rule 9, is based on the rule that the District adopted on September 21, 1994. This rule was approved into the SIP on December 15, 1997. The Federal Register citation is 62 FR 65611.

The SIP rule is federally enforceable; the new District rule is not.

Part 1e of Condition 2780, which contains the older, higher NOx limit, is being retained because it is federally enforceable. If the new regulation is approved into the SIP, part 1e will be deleted.

CEQA

The project is considered to be categorically exempt under District CEQA Regualtion 2-1-312.2 and 2-1-312.3.

> **2-1-312 Other Categories of Exempt Projects:** In addition to ministerial projects, the following categories of projects subject to permit review by the District will be exempt from the CEQA review, either because the category is exempted by the express terms of CEQA (subsections 2-1-312.1 through 312.9) or because the project has no potential for causing a significant adverse environmental impact (subsections 2-1-312.10 and 312.11). Any permit applicant wishing to qualify under any of the specific exemptions set forth in this Section 2-1-312 must include in its permit application CEQA-related information in accordance with subsection 2-1-426.1. In addition, the CEQA-related information submitted by any permit applicant wishing to qualify under subsection 2-1-312.11 must demonstrate to the satisfaction of the APCO that the proposed project has no potential for resulting in a significant environmental effect in connection with any of the environmental media or resources listed in Section II of Appendix I of the State CEQA Guidelines.
> 312.1 Applications to modify permit conditions for existing or permitted sources or

facilities that do not involve any increases in emissions or physical modifications.
312.2 Permit applications to install air pollution control or abatement equipment.
312.3 Permit applications for projects undertaken for the sole purpose of bringing an existing facility into compliance with newly adopted regulatory requirements of the District or of any other local, state or federal agency.

The project is not located within 1000 feet from a School and is not subject to the public notification requirements of Reg. 2-1-412.

Best Available Control Technology:

This application does not trigger BACT.

Offsets: Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NOx. Based on the emission calculations above, offsets are not required for this application per Regulation 2-2-302.

PSD, NSPS, NESHAPS

S-100 is subject to the PSD permit program. Conditions No. 2780. 14299, and 21961 contain PSD permit requirements for S-100.

The PSD conditions will be revised because they require steam injection and associated monitoring, while steam injection will not be required after the Dry Low NOx combustors are installed. The NOx emissions will be monitored by the existing CEM.

S-100 is subject to NSPS Subpart GG (2/24/06) and meets all substantive requirements including the NOx limit of 75 ppm contained in 60.332(a)(1), and the standard for sulfur dioxide of 0.015% by volume at 15%O_2 contained in 60.333.

NESHAPS does not apply because the facility is not a major source of HAPs.

Title V
This facility is subject to BAAQMD Regulation 2, Rule 6, Major Facility Review, and has an existing Major Facility Review (Title V) permit. Changes to the District permit may require revisions to the Major Facility Review permit. In this case, since the description of S-100 and conditions 2780 and 21961 are being changed, the Major Facility Review permit must be revised.

Revisions to the Major Facility Review permit can be classified as administrative amendments, minor revisions, significant revisions, and reopenings. Reopening are initiated by the District or EPA when necessary to correct mistakes. Administrative amendments and significant revisions are defined in Sections 2-6-201 and 2-6-226, respectively. All other revisions are minor revisions.

Significant revisions and reopenings require public notice and may require a public hearing. Administrative amendments require no review by EPA or the public. Minor revisions require a 45-day EPA review period, but are not subject to public notice.

The new NOx limit in BAAQMD Regulation 9, Rule 7, is an administrative amendment because the new limit is not in the California State Implementation Plan and is therefore not federally enforceable. The inclusion or revision of non-federally enforceable requirements is defined by Section 2-6-201 as an administrative amendment.

However, the facility will achieve the limit by installing new Dry Low NOx combustors and discontinuing the use of steam injection, which is required by Condition 2780 and PSD condition 21961. This revision meets the definition of a minor revision because it is not a significant revision as defined by Section 2-6-226 as follows:

> **2-6-226 Significant Permit Revision:** Any revision to a federally enforceable condition contained in a major facility review permit that can be defined as follows:
> 226.1 The incorporation of a change considered a major modification under 40 CFR Parts 51 (NSR) or 52 (PSD);
> 226.2 The incorporation of a change considered a modification under 40 CFR Parts 60 (NSPS), 61 (NESHAPS), or Section 112 of the Clean Air Act (HAP);
> 226.3 Any significant change or relaxation of any applicable monitoring, reporting or recordkeeping condition;
> 226.4 The establishment of or change to a permit term or condition allowing a facility to avoid an applicable requirement, including:
> 4.1 a federally enforceable emission limit assumed in order to avoid classification as a modification under any provision of Title I of the federal Clean Air Act, or
> 4.2 an alternative hazardous air pollutant emission limit pursuant to Section 112(i)(5) of the Clean Air Act;
> 226.5 The establishment of or change to a case-by-case determination of any emission limit or other standard;
> 226.6 The establishment of or change to a facility-specific determination for ambient impacts, visibility analysis, or increment analysis on portable sources; or
> 226.7 The incorporation of any requirement promulgated by the U. S. EPA under the authority of the Clean Air Act provided that three or more years remain on the permit term.

The District will submit the minor revision to EPA for review after the District Authority to Construct is issued.

Federal Enforceability

Every requirement in the Major Facility Review permit must be designated as federally enforceable or non-federally enforceable in accordance with the California Health and Safety Code § 42301.12(a)(3). Therefore, the new limit will be designated non-federally enforceable. The existing limits will continue to be federally enforceable. Each non-federally enforceable permit condition is designated as such by as asterisk (*).

Monitoring Analysis

Major Facility Review permits require a review of monitoring. The only limit that is changing in the permit is the NOx limit for S-100, so only the NOx monitoring is being reviewed.

NOx is monitored at S-100 by a NOx CEM, which is considered to be appropriate continuous monitoring for NOx. After the Dry Low NOx combustors are installed, the steam injection will not exist and the rate of steam injection will no longer be monitored.

Steam or water is considered to be a control device for the purposes of 40 CFR 64, Compliance Assurance Monitoring (CAM). However, this turbine is exempt from CAM in accordance with §64.2(b)(vi) because the Major Facility Review permit requires the NOx CEM. After the steam injection is dismantled, the turbine will also be exempt because it will have no longer have an add on NOx control device.

PERMIT CONDITIONS

Existing Conditions for S-100

COND# 14299 ----------

1. The owner/operator shall ensure that sources S-100, Gas Turbine, and S-101 & S-102, Boilers exclusively combust no other fuel in them except for natural gas . (basis: 2-1-403)

Modified Permit Condition No. 2780. Changes in underline/stikethrough format.

COND# 2780 ----------

Any condition that is preceded by an asterisk is not federally enforceable.

Calpine Gilroy Cogen, L. P.
Facility #B1180
PERMIT CONDITION #2780
(Amended August 29, 1987, June 27, 1989, September 13, 1990 [APPLICATION NO. 5140]; May, 1998 [Application #25841]; December, 1998 [Application #18872]; January, 2000 [Application #455]; November 2005 [Application # 13479]); May, 2010 [A#18434])

1a. (i)The oxides of nitrogen (NOx) concentration in the gas turbine exhaust shall not exceed 25 ppmvd at 15% oxygen averaged over any three-hour period. (BACT, PSD)

*(ii) Effective after the new Dry Low NOx combustor becomes operational, the oxides of nitrogen (NOx) concentration in the gas turbine exhaust shall not exceed 5 ppmvd at 15% oxygen or 0.15 lb/MW-hr averaged over any three-hour period excluding startup and shutdown periods. The Dry Low NOx combustor shall be installed at the next scheduled major maintenance or no later than January 1, 2012.
(Basis: 9-9-301.2)

1b. (i) The limit in part 1a(i) shall not apply during cold start-up, which is not to exceed four hours, or shutdown procedure, which is not to exceed two hours. However, for daily start-ups after a shutdown of twelve (12) hours or less, the start-up period shall be limited to one (1) hour. (BACT)

*(ii) The limit in part 1a(ii) shall not apply during cold start-up, which is not to exceed four hours, or shutdown procedure, which is not to exceed two hours. However, for daily start-ups after a shutdown of twelve (12) hours or less, the start-up period shall be limited to one (1) hour. (BACT, 9-9-217, 9-9-218)

1c. During any mode of operation, the owner or operator shall inject steam for NOx control at the turbine when steam of specified pressure and temperature is available. This part will no longer apply after the Dry Low NOx combustor is installed and operational.
(BACT, PSD)

1d. (Deleted under BAAQMD Application #445)

1e. Effective after startup of the modification proposed in Application #445, the oxides of nitrogen (NOx) concentration in the gas turbine exhaust shall not exceed 21.0 ppmvd at 15% oxygen averaged over any calendar day , excluding periods of startup or shutdown pursuant to Regulation 9-9-114 or periods of inspection and maintenance pursuant to Regulation 9-9-113. (2-2-604, SIP 9-9-113, SIP 9-9-114, SIP 9-9-305, SIP 9-9-401)

1f. Mass emissions of NOx at S-100, Gas Turbine, shall not exceed 323.7 tons per any consecutive twelve months. The permit holder shall install current Best Available Control Technology if this limit is exceeded or if the permit holder applies for a limit exceeding this limit. (BACT, SIP 9-9-305, 2-2-604)

1g. Mass emissions of NOx at S-100, Gas Turbine, shall not exceed 1876 lb in any calendar day. (Regulation 2-2-301)

2. (Deleted under BAAQMD Title V application #25841)

3a. An oxidizing catalyst (A100) shall reduce CO emissions from the gas turbine (S-100). The catalyst shall operate during all periods of turbine operation except during start-up, which shall not exceed one hour for warm start, or four hours for a cold start. (9/98 BACT)

3b. Annual CO emissions shall not exceed 100 tons in any consecutive twelve months for sources S-100, S-101, and S-102. Sampling ports for testing for compliance with this condition shall be maintained as approved by the District's Source Test Section.
(6/27/89) (BACT)

3c. CO emissions in the gas turbine exhaust shall not exceed 10 ppmvd at 15% oxygen over any three- hour period . (9/98 BACT)

3d. The limit in ~~paragraph~~ part 3c shall not apply during startup and shutdown periods. Emissions during startup and shutdown periods shall be limited to 14670 lbs per any consecutive twelve months. (6/27/89 BACT)

3e. The limit in ~~paragraph~~ part 3c shall not apply during operation at less than 80 percent load, which is not to exceed 750 hours in any consecutive twelve months. The emissions during

operation at less than 80 percent load shall not exceed 14.8 tons per any consecutive twelve months. (9/98 BACT)

3f. The limit in ~~paragraph~~ part 3c shall not apply when ambient temperature is less than 35 degrees F. The CO limit when ambient temperature is less than 35 degrees F shall be 15 ppmvd, averaged over one hour. Operation at this alternate limit shall be limited to 100 hours in any consecutive twelve- month period. Emissions of CO while operating under this condition shall be limited to 3120 lbs. in any consecutive twelve-month period. (9/98 BACT)

3g. (Deleted under BAAQMD Application # 13479)

4. Nitrogen oxide (NOx) emissions from each auxiliary boiler (S-101, S-102) shall not exceed 40 ppmvd at 3% oxygen averaged over any three-hour period. (PSD, BACT)

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5. (Deleted under BAAQMD Application # 13479)

6. Total emissions from the gas turbine (S-100) and auxiliary boilers (S-101, S-102) shall not exceed 25 ton/year TSP or 40-ton/yr. NMHC.

6.a. As long as natural gas is burned exclusively at the turbine and boilers, particulate emissions shall not be monitored. (Cumulative increase)

6.b. (Deleted under BAAQMD Application # 13479)

6.c. (Deleted under BAAQMD Application # 13479)

7.a. (Deleted under BAAQMD Application # 13479)

7.b. (Deleted under BAAQMD Application # 13479)

8. The steam injection to control NOx emissions from the turbine shall be operated during all periods when injection steam is available at the specified pressure and temperature. This part will no longer apply after the Dry Low NOx combustor is installed and operational. (BACT)

9a. Pursuant to the PSD permit, the owner or operator shall install and operate a continuous monitoring system to monitor and record the fuel consumption and the ratio of steam injected to fuel fired in the turbine. This part shall apply until installation of the Dry Low NOx combustor. (PSD, 2-1-403)

9b. Pursuant to the PSD permit, the owner or operator shall install and operate a continuous monitoring system to monitor and record the ~~fuel consumption and the ratio of steam injected to~~ fuel fired in the turbine. This part shall apply after the installation of the Dry Low NOx combustor. (PSD, 2-1-403)

10.a. (Deleted under BAAQMD Application # 13479)

10.b. (Deleted under BAAQMD Application # 13479)

11. The owner or operator shall install, calibrate and operate District approved continuous in-stack emission monitors for nitrogen oxides, carbon monoxide, and either oxygen or carbon dioxide at the turbine and the boilers. (PSD, BACT, 2-1-403)

12. (Deleted under BAAQMD Title V application #25841)

13a. The exhaust stack from the gas turbine (P-100) shall be constructed to a height of at least 80 feet. (PSD)

13b. Sampling ports for testing for compliance with these conditions shall be maintained as approved by the District's Source Test Division.
(BAAQMD 1-501)

14. All records associated with the above conditions shall be retained by the owner or operator, for at least five years, for review by the District and shall be supplied to the District upon request. The recording format shall be subject to the approval of the APCO. (PSD, BACT)

15. (Deleted under BAAQMD Application # 13479)

16. (Deleted under BAAQMD Title V application #25841)

17. (Deleted under BAAQMD Application # 13479)

18. The auxiliary boilers (S-101, S-102) shall not operate simultaneously with the gas turbine more than a combined total of 28 boiler hours/day or 3950 boiler hours/year. The auxiliary boilers may operate any time during period of gas turbine outage. (9/13/90) (Cumulative increase)

Condition # 21961:
For S-100 - GAS TURBINE, S-101 AND S-102, BOILERS

Following are the PSD conditions imposed by EPA before construction in 1985 and amended by Applications 25841 in 1998 and 18434 in 2010.

I. (deleted BAAQMD Title V application #25841)

II. (deleted BAAQMD Title V application #25841)

III. Facilities Operation

All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this Approval to Construct/Modify shall at all times be maintained in good working order and be operated as efficiently as possible so as to minimize air pollutant emissions. (PSD)

IV. (deleted BAAQMD Title V application #25841)

V. Right to Entry

The Regional Administrator, the head of the State Air Pollution Control Agency, the head of the responsible local air pollution control agency, and/or their authorized representatives, upon the presentation of credentials, shall be permitted:

A. to enter upon the premises where the source is located or in which any records are required to be kept under the terms and conditions of this Approval to Construct/Modify; and

B. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this Approval to Construct/Modify; and

C. to inspect any equipment, operation, or method required in this Approval to Construct/Modify; and

D. to sample emissions from the source. (PSD)

VI. Transfer of Ownership

In the event of any changes in control or ownership of facilities to be constructed or modified, this Approval to Construct/Modify shall be binding on all subsequent owners and operators. The applicant shall notify the succeeding owner and operator of the

existence of this Approval to Construct/Modify and its conditions by letter, a copy of which shall be forwarded to the State and local Air Pollution Control Agency. (PSD)

VII. Severability

The provisions of this Approval to Construct/Modify are severable, and, if any provision of this Approval to Construct/Modify is held invalid, the remainder of this Approval to Construct/Modify shall not be affected thereby. (PSD)

VIII. Other Applicable Regulations

The owner and operator of the proposed project shall construct and operate the proposed stationary source in compliance with all other applicable provisions of 40 CFR Parts 52, 60 and 61 and all other applicable Federal, State and local air quality regulations. (PSD)

IX. Special Conditions

A. (deleted BAAQMD Title V application #25841)

B. Air Pollution Control Equipment

(i) On and after the date of startup of the S100, Turbine, the owner or operator shall install, continuously operate, and maintain a steam injection system to reduce emission of nitrogen oxides from the gas turbine. This condition shall apply until the installation of Dry Low NOx combustors pursuant to Application 18434, issued in April 2010.

(ii) On and after the date of installation of Dry Low NOx combustors at S100, Turbine, pursuant to Application 18434, the owner or operator shall use the Dry Low NOx combustors to reduce emission of nitrogen oxides from the gas turbine.

C. Emission Limits for NOX

On and after the date of startup of the gas turbine, the owner or operator shall not discharge or cause the discharge into the atmosphere NOX in excess of 25 ppmv at 15% O2 (3-hour average). (PSD)

This limit shall not apply during cold start-up, which is not to exceed four hours, or shutdown procedure, which is not to exceed two hours. However, for daily start-ups after a shutdown of twelve (12) hours or less, the start-up period shall be limited to one (1) hour.

On and after the date of startup of the auxiliary boilers, the owner or operator shall not discharge or cause the discharge into the atmosphere NOX in excess of 40 ppmv at 3% O2 (3-hour average). (PSD)

D. Performance Tests

1. The owner or operator shall conduct performance tests for NOX and furnish the Bay Area Air Quality Management District and the EPA a written report of the results of such tests upon written request of EPA or the District. Any test for NOX shall be conducted at the maximum capacity of the emission unit being tested. (PSD)

2. Performance tests for the emissions of NOx, shall be conducted and the results reported in accordance with the test method set forth in 40 CFR 60, Part 60.8 and Appendix A. Performance tests for the emission of NOX shall be conducted using EPA Methods 7 and 20. (PSD)

The EPA (Attn: A-3-3) shall be notified in writing at least 30 days prior to such tests to allow time for the development of an approvable performance test plan and to arrange for an observer to be present at the test. (PSD)

Such prior approval shall minimize the possibility of EPA rejection of test results for procedural deficiencies. In lieu of the above mentioned test methods, equivalent methods may be used with prior written approval from the EPA. (PSD)

E. Continuous Emission Monitoring

1. Prior to the date of startup and thereafter, the owner or operator shall install, maintain and operate the following continuous monitoring systems in the heat recovery steam generator exhaust stack:

   a. Continuous monitoring systems to measure stack gas NOX concentration, fuel usage, steam-to-fuel ratio, and either O2 or CO2 concentrations. The systems shall meet EPA monitoring performance specifications (40 CFR 60.13 and 40 CFR 60, Appendix B, Performance Specifications). Part 1.a shall apply until the installation of Dry Low NOx combustors pursuant to Application 18434, issued in April 2010. (PSD)

   b. Continuous monitoring systems to measure stack gas NOX concentration, fuel usage, and either O2 or CO2 concentrations. The systems shall meet EPA monitoring performance specifications. Part 1.b shall apply after the installation of Dry Low NOx combustors pursuant to Application 18434, issued in April

2010. (40 CFR 60.13 and 40 CFR 60, Appendix B, Performance Specifications). (PSD)

2. The owner or operator shall maintain a file of all measurements, including continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by 40 CFR 60 recorded in a permanent form suitable for inspection. The file shall be retained for at least five years following the date of such measurement, maintenance, reports and records. (PSD)

3. The owner or operator shall submit a written report of all excess emissions to EPA (Attn: A-3-3) for every calendar quarter. The report shall include the following:

   a. The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors used, and the date and time of commencement and completion of each time period of excess emissions. (PSD)

   b. Specific identification of each period of excess emissions that occurs during start-ups, shutdowns and malfunctions of the cogeneration gas turbine system. The nature and cause of any malfunction (if known) and the corrective action taken or preventive measures adopted shall also be reported. (PSD)

   c. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments. (PSD)

   d. When no excess emission have occurred or the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be stated in the report. (PSD)

   e. Excess emissions shall be defined as any three-hour period during which the average emissions of NOX, as measured by the continuous monitoring system, exceeds the NOX maximum emission limits set forth in Conditions IX. C. (PSD)

4. Excess emission indicated by the CEM system shall be considered violations of the applicable emission limit for the purposes of this permit. (PSD)

F. (Deleted under BAAQMD Title V application # 6748)

G. New Source Performance Standards

The proposed facility is subject to the Federal regulations entitled Standards of Performance for New Stationary Sources (40 CFR 60). The owner or operator shall meet all applicable requirements of Subparts A and GG of this regulation. (PSD)

RECOMMENDATION

Issue an Authority to Construct to install a dry low NOx combustor (GE DLN1+ or Power Systems Manufacturing's LEC III) a Change of Permit Condition for Conditions No. 2780 and 21961. The following source is subject to Conditions No. 2780, 14299, and 21961:

S-100 GE Frame 7 Gas Turbine Generator, Rated @ 87MW
Turbine, Cogeneration, 1085MM BTU/hr max,
Natural gas, 7 days/wk

EXEMPTIONS

None.

By:_____ Date:_____

Brian Lusher
Senior Air Quality Engineer